



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/678,088

10/06/2003

Masayuki Nakayasu

0425-1082P

4496

2292

7590

09/21/2005

BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER

GOODEN JR, BARRY J

ART UNIT

PAPER NUMBER

3616

DATE MAILED: 09/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	10/678,088		NAKAYASU ET AL.	
	Examiner		Art Unit	
	Barry J. Gooden Jr.		3616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☒ Claim(s) 11-14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 May 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to because the sections are not labeled properly. Section lines should be inserted in figures 2, 3, 4, and 5. For example, figure 2a should include a section line labeled 2b and figure 2b should include a section line labeled 2a. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The specification is objected to because the referenced prior art, JP-A 2002-172995 and US Patent Application 2002/0093182, numbers appear to be incorrect,

Art Unit: 3616

please verify the application numbers are correct. Additionally, in order to ensure proper consideration the applicant should submit a copy of the foreign reference cited in the specification, as the reference is not readily available to the examiner. In addition, please provide an IDS listing these references.

3. The disclosure is objected to because of the following informalities:

Throughout the specification, pages 4-12, the description of the invention references claim numbers, such as page 4 line 1. This is contrary to US practice, and is objected to because during the course of prosecution the claims may change or be canceled.

4. The specification is replete with errors. The Examiner suggests the applicant carefully review the specification some examples follow.

In page 3, line 22, the term "theses," please change to "these".

In page 3, line 2 states, "in which a mounting work to a module can be performed," please clarify this sentence.

In page 4, line 8 the term "existing," is used where the term "exiting" should be. Please correct all instances of this, such as paragraph 038.

In page 6, line 27 uses the term "fall," this term is not an accurate description of the invention. Suggest substituting the term "rupture," no new matter should be entered. Please correct all instances of this, such as paragraph 033.

In page 12, line 4, the term "much," should be replaced with "very".

In page 14, line 19, "On one," as best understood, should be replaced with "One".

Art Unit: 3616

In page 17, line 1 states, "The plural number of second discharge ports," please replace with "A plurality of discharge ports".

5. The description on page 10, lines 7-8 and lines 13-14 is confusing because, the two paragraphs contradict one another, the single igniter disclosed is positioned first in the diffuser and second within the pressurized space.

6. The specification and the drawings are both objected to because many of the reference numbers in the specification, pages 1-3, used to describe the prior art are then reused in the detailed description of the invention. The applicant is required to carefully review and correct the drawings and specification.

No new matter should be entered.

Appropriate correction is required.

Claim Objections

7. Claims 1-10 are objected to because of the following informalities:

In regards to claims 1 and 10, the term "existing" should be replaced with "exiting".

In regards to claim 6, line 7 "isexactly" should be replaced with "is exactly".

Appropriate correction is required.

8. Claims 11-14 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot be dependent on another multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claim 10 is rejected under 35 U.S.C. 112, first paragraph, as failing to provide proper written description.

In regards to claim 10, paragraphs 1 and 3 are in conflict. Paragraph 1 states, "a diffuser portion which is connected to an opening portion of the inflator housing, accommodates an igniter therein," as best understood, this suggests that the igniter is located in the diffuser portion. Paragraph 3 states, "an igniter for rupturing the rupturable plate is disposed in the single space charged with the pressurized gas," as best understood this suggests the igniter is located in the diffuser portion. There is no support in the specification for the use of two igniters and a single igniter cannot be in different locations simultaneously.

As best understood, the igniter is located within the pressurized gas housing and is axially oblique to the inflator housing, the igniter creates a rupture energy that ruptures the rupturable plate allowing the gas to enter the diffuser portion. Claim 10 will be considered on these merits.

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 3616

12. Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In regards to claim 1, paragraph 3 states, "the axial direction of the igniter is not exactly opposite direction to a surface of the rupture the rupturable plate," and paragraph 4 states "activation of the igniter in the exactly opposite direction to rupture the rupturable plate," as best understood, these two statements are contradictory. The axial direction of the igniter is the direction in which the igniter activates (ignites), although the energy may be redirected.

13. In regards to claims 1-9, claim 1 paragraph 4 line 1, uses "means for" language ("means for directing a rupturing energy") in what appears to be an attempt to invoke 35 USC 112, 6th paragraph. However, since this claim is generic to a number of embodiments and the language of the specification does not provide sufficient guidance as to which structural elements are included, as providing the directing function, it is unclear what the scope of the claim is. Further problems, with this issue, occur in claims 2-9 because they add structural limitations such as, the fragile portion (claim 2), the guiding passage (claim 5) and the groove or notch (claim 7). It is unclear if these elements are part of the "means for directing," and are recited as further limitations or are additional elements. Claims including further limitations should include the phrase, "wherein the means for directing".

14. In regards to claims 7 and 8, the term "fall down" is not an accurate description of the invention. Suggest replacing "fall down" with "rupture".

Claim Rejections - 35 USC § 102

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-2, 5-6, 9/1, 9/2, 9/5 and 9/6 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Headley, US Patent 5,678,856.

In regards to claim 1, Headley clearly shows an inflator (20) having a cylindrical inflator housing (40) wherein a pressurized gas is charged. A diffuser portion (24), which is connected to an opening in the inflator housing (42), has an igniter (28) and gas discharge port (62) therein. The pressurized gas housing (40) is sealed from the diffuser portion (24) with a rupturable disk (26). The igniter (28) and the inflator housing (40) are disposed such that their respective axial directions are orthogonal to one another. A means for directing (108, 144, and 126) the rupturing energy generated by the activation of the igniter (28) is in the direction necessary to rupture the rupturable plate (26) (Figures 1-4).

In regards to claim 2, Headley also teaches a fragile portion (142) at a portion exactly opposite to the rupturable plate (26), the fragile portion (142) being ruptured at

Art Unit: 3616

the activation of the inflator and a rupturing energy acting on the rupturable plate (26) from the fragile portion (142) (Figures 1-4).

In regards to claim 5, Headley also discloses a guiding passage (144) for guiding the rupturing energy discharged from the igniter (28) to the rupturable plate (26), formed in the diffuser portion (24) (Figures 1-4).

In regards to claim 6, Headley also shows a guiding passage (144) comprised of a cap (106 and 108) which surrounds the igniting portion of the igniter (28) and is disposed in a direction orthogonal to the axial direction of the inflator housing (20), and a hole (144) which is provided at a position on a side face of the cap (106 and 108) which is exactly opposite to the rupturable plate (26) (Figures 1-4).

In regards to claims 9/1, 9/2, 9/5 and 9/6, Headley shows the pressurized gas is charged in a single space (40) (Headley, Figures 1-4).

16. Claim 10 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by Buchanan et al., US Patent 5,582,428.

In regards to claim 10, Buchanan et al. clearly show an inflator (56) having a cylindrical inflator housing (58 and 60), open at one end (98) and wherein a pressurized gas is charged and a diffuser portion (110), which is connected to the opening (98) in the inflator housing (58 and 60), the opening (98) being closed by a rupturable plate (100), an igniter (72), disposed in the space charged with pressurized gas axially oblique to the inflator housing (58 and 60), for rupturing the rupturable plate, and a means causing a rupturing energy generated by activation of the igniter to act in an

Art Unit: 3616

oblique direction to the rupturable plate to rupture the rupturable plate (Buchanan et al., Figure 3).

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

19. Claims 4, 7-8, 9/4, 9/7 and 9/8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Headley in view of Swann et al., US Patent 6,295,935 B1.

In regards to claim 4 and 7-8, Headley disclose all of the claimed elements as previously discussed, except a groove or notch surrounding the fragile portion. Swann et al. disclose a groove or notch (122) surrounding a fragile portion (142a) shaped like an arrowhead (Swann et al., Figures 4 and 5) and used to create a stress riser thereby reducing the force required to rupture the rupturable plate. It would have been obvious

Art Unit: 3616

to one having ordinary skill in the art at the time of invention to modify the invention of Headley with the groove or notch section in view of the teachings of Swann et al. Such a modification would reduce the force required to rupture the fragile portion, and provide a stress riser ensuring the cap (106 and 108) would consistently rupture at the correct portion, thereby increasing the rupturability of the invention.

In regards to claim 9/4, 9/7 and 9/8, Headley discloses all of the claimed elements as previously discussed, including an inflator (20) wherein the pressurized gas is charged in a single space (40) (Headley, Figure 1).

20. Claims 3 and 9/3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Headley in view of Frey et al., US Patent 5,263,740.

In regards to claim 3, Headley discloses all of the claimed elements as previously discussed, except the fragile portion provided in the igniter being constituted with a combination of a hole provided in the side face of a cup member and a sealing tape closing the hole from the inside of the cup member. Frey et al. disclose an igniter (412) with a hole (422) and sealing tape (434) closing the hole used to provide an easily rupturable orifice that remains hermetically sealed. It would have been obvious to one having ordinary skill in the art at the time of invention to modify the invention of Headley to include an orifice and sealing tape in view of the teaches of Frey et al. Such a modification would ensure a hermetical seal and increase the reliability of the rupturability of the invention according to Headley (Frey et al., Figure 8).

Art Unit: 3616

In regards to claim 9/3, Headley discloses all of the claimed elements as previously discussed, including an inflator (20) wherein the pressurized gas is charged in a single space (40) (Headley, Figure 1).

Conclusion

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kort et al., US Patent 5,423,570, discloses an air bag with an igniter being axially orthogonal to one another and the igniter chamber being sealed. Jeong, US Patent 5,653,463, discloses an igniter, the igniter being in direct connection with means to rupture a rupturable seal allowing pressurized gas to enter the diffuser. Webber et al., US Patent 6,588,796 B2, discloses an igniter, the igniter being in direct connection with means to rupture a rupturable seal allowing pressurized gas to enter the diffuser. Fink, US Patent 6,543,806 B1, discloses an igniter, the igniter being in direct connection with means to rupture a rupturable seal allowing pressurized gas to enter the diffuser. Nanbu, US Patent 6,676,157 B2, discloses an igniter, the igniter being in direct connection with means to rupture a rupturable seal allowing pressurized gas to enter the diffuser. Eriks, US Patent 6,386,583 B1, discloses an igniter located within a stored gas chamber. Horton et al., US Patent 6,629,703 B2, discloses an igniter located in the diffuser portion in an axially oblique to the inflator housing and means of directing the rupture energy generated by the igniter to a rupturable disk allowing pressurized gas to enter the diffuser. Mizuno et al., US Patent 6,834,885 B2, discloses an inflator having a bottle for storing a high pressure gas, an igniter axial orthogonal to the bottle, a means of directing rupture energy from the activated igniter to

Art Unit: 3616

the rupturable seal located at the opening to the pressurized bottle, the opening, once the rupturable seal is ruptured, allowing fluid communication between the pressurized bottle and a diffuser portion. Specht, US Patent 6,669,232 B2, discloses a device for inflating an airbag. Nakashima et al., US Patent 6,848,713 B2, discloses an air bag gas producer and an igniter cup section sealed by a sealing tape. Jenkins et al., US Patent 6,099,033, discloses a hybrid inflator having a squib housing sealed by a sealing foil.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barry J. Gooden Jr. whose telephone number is (571) 272-5135. The examiner can normally be reached on Monday-Friday 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul N. Dickson can be reached on (571) 272-6669. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Barry J Gooden Jr.
Examiner
Art Unit 3616

RUTH LAN
PRIMARY EXAMINER


9/19/05

BJG